Agenda and Questions for Discussions
CFSv2 Evaluation Workshop

April 30 – May 1, 2012
Raytheon Building
5700 Rivertech Court
Riverdale, Maryland 20737

Expected Outcome: A white paper on the near-term research priorities for CFSv3 development based on collaborations among NCEP, other NOAA labs/centers and the extramural community.

Day 1 (April 30) Morning

07:30 – 08:00 Set up posters and pick up badges

08:00 – 09:10: Session 1: Programmatic Overviews *(Chair: Huang)*

- Workshop Objectives (**J. Huang**) 15 min.
- Take CFS to the next level (**Uccellini**) 25 min.
- CPO/MAPP Perspective (**Mariotti**) 15 min.
- CFSv2 Overview (**Lapenta**) 15 min.

09:10 – 10:30: Session 2.1: Assessment of CFSv2 prediction skills *(Chair: Halpert)*

- CFSv2 vs. ECMWF (**Dutton**)
- CFSv2 in Context of MME (**van den Dool)**
- CFSv2 Assessment over the US Affiliated Pacific Islands **(Annamalai)**
- CFSv2 decadal runs (**Saha**)

10:30 - 10:50 Break

10:50 – 12:10 Session 2.2: Evaluations over ocean *(Chair: Rosati)*

- Tropical Pacific SST in CFSv2 (**Xue**)
- Nino3.4 SST in CFSv2 vs. CFSv1 (**Barnston**)
- Sea Ice (**W. Wang**)
- Impact of Oceanic Initialization (**Zhu**)

12:10 – 14:00: Lunch and Poster Viewing

Day 1 (April 30) Afternoon

14:00 – 15:20 Session 2.3: Evaluations of climate modes and decadal variability *(Chair: Mariotti)*

- MJO (**Weaver)**
- SST-Precipitation Relation During the Asian Summer Monsoon (**Roxy**)
- N. Pacific Oscillation (NPO) and Association with Tropical SST (M-M **Lu**)
- Atlantic Multi-decadal Variability (**Colfescu)**

15:20 – 15:40 Break

15:40 – 17:40 Session 2.4: Evaluations over land *(Chair: Dickinson)*

- Monthly Tornado Outlook (**Tippett**)
- Hurricanes (**Schemm**)
- Land Surface Water and Energy Prediction (**Yang**)
- Land Hydrology (**Wood**)
- Agricultural Drought (**Mo**)
- 2011 Texas Drought (**Fernando**)

Day 2 (May 1) Morning

08:00 – 09:40 Session 3: Physical/climate processes and modeling *(Chair: Bretherton)*

- Stratocumulus to Cumulus Transition in CFS (**Teixeira**)
- Diagnosis of Biases in Cloud (**Yoo**)
- Evaluation of Cloud Physics Using Satellite Data (**Bennartz**)
- Troposphere-Stratosphere Coupling (**Perlwitz**)
- Model Biases in CFSv2 in Summer Monsoon Climate: Sensitivity Experiments **(Rao)**

09:40 - 10:00 Break

10:00 – 10:40 Session 3 (continued)

- AMOC (**B. Huang**)
- Inclusion of the oceanic diurnal variability in NCEP CFS (**Xu Li**)
- Water Cycle and Land-Atmosphere Coupling (**Dirmeyer)**

10:40 – 11:40 Session 4: Climate Modeling Strategies *(Chair: Lapenta)*

- NCEP's Role in a National Unified Weather-Climate Modeling Strategy (**Bretherton**)
- NCEP Climate Process Team Experience (**Pan**)
- NMME as a Platform for US Modeling Collaboration (**Kirtman**)

Day 2 (May 1) Afternoon

11:40 – 13:20 Lunch (on your own)

13:20 – 14:20 Session 5: Synthesis reports

- Synthesis Report on i) CFSv2 vs. CFSv1 and ii) Biases in CFSv2 (**Kumar**)
- EMC Model Upgrades Since CFSv2 Implementation (**Moorthi**)

14:20 – 14:40 Break

14:40 – 17:00 Session 6: Discussions (Lead: Kinter*)*

A **Core Team** (Bretherton, Dickinson, Dutton, Higgins, Huang, Kinter, Kumar, Lapenta, Moorthi and Rosati) will prepare the white paper based on the discussions.

Please take a look at the set of questions below and send your response to Jin.Huang@noaa.gov by April 20th, 2012. Jim Kinter will start the discussions with a summary of the responses to the questions.

Questions to be addressed in the CFSv2 Evaluation Workshop Discussions

A. CFSv2 Evaluations

A1) Do the CFSv2 evaluations included in submitted abstracts and done elsewhere sufficiently document the model's current status as a climate forecast and research tool and the improvements from CFSv1 to CFSv2?

A2) What additional diagnostics and experiments, especially process-oriented model diagnosis, do you suggest to further understand the model biases in CFSv2?

A3) Does the current data archive support process-oriented diagnosis of CFSv2? Have we sufficiently capitalized on the data collected from process studies, field campaigns and satellite measurements for CFSv2 model evaluations and improvements?

A4) What standard evaluation metrics for CFS should be generated routinely by NCEP?

B. Model improvements towards CFSv3

B1) How can the model evaluation/diagnosis process for CFSv2 be integrated into the CFSv3 development process?

B2) In the CFSv3 Planning Meeting in August 2011 (please click to see the meeting Summary Report), several recommendations were made for how to improve the model development process, including, among others, that Planning for the next generation of CFS should:

- Be a sustainable end-to-end effort with a bold and far-reaching vision that addresses the broad range of user requirements, especially addressing regional scales and extreme events.
- Take into account the end-to-end requirements of users in the research community and in the private sector, including the multiple purposes of reanalysis and reforecasts.
- Involve the research community at the earliest possible stage. For example, further research and development is needed to go beyond the current level of accuracy and provide reliable regional climate predictions at ISI time scales, through increasing model resolution, including additional climate-relevant processes in the prediction model, and improving data assimilation.

Do you agree with these and other recommendations from the August 2011 Planning Meeting? Do you have additional recommendations? Do you have specific suggestions for how to implement the recommendations?

B3) What are the potential synergies among climate modeling efforts at NCEP, at other NOAA labs/centers, and in the external community? How can NOAA take best advantage of these synergies?

B4) What are the specific requirements for NCEP infrastructure to support for CFSv3 development by NCEP and its external collaborators?

List of Posters

1. **Block** (IRI): Statistical and dynamical climate predictions to guide water resources in Ethiopia.
2. **Cai** (FSU): Processes based attributions to CFSv2 systematic errors in surface temp forecasts
3. **Chen, M-Y** (NCEP/CPC): Prediction Skill of daily SSTs from CFSv1 and CFSv2
4. **Chen, L-C** (NCEP/CPC): Prediction Skill of Seasonal Runoff Forecasts From CFSv2
5. **Cohen** (AER): Evaluating the Impacts of Eurasian Snow Cover Variability on Wintertime Stratosphere-Troposphere Coupling in the CFSv2 Model
6. **Collins** (NCEP/CPC): Assessing bias correction of CFSv2 hindcasts conditional on climate regimes
7. **Gonzalez** (IRI): Seasonal-to-Interannual Variability of Southeastern South America in CMIP5 Decadal Hindcasts
8. **Hu** (NCEP/CPC): Prediction skill of monthly SST in the North Atlantic Ocean in NCEP CFSv2
9. **Jia** (CMA and CPC): Prediction of Quasi-Biweekly Oscillation of the Tropical Atmosphere by the NCEP CFS
10. **Jiang** (CMA and CPC): Asian Monsoon in the NCEP CFS: Summer Monsoon, Winter Monsoon and Seasonal Cycle
11. **Krishnamurthy** (COLA): South Asian monsoon variability in CFSv2 on intraseasonal and seasonal time scales
12. **Li, Xun** (CMA and CPC): A Dynamical-Statistical Forecast Model for Western Pacific Named Tropical Cyclones Based on CFS
13. **Liu** (CMA and CPC): Diagnostics of Intraseasonal Prediction Biases of the Asian Summer Monsoon by CFS
14. **Meng** (NCEP/EMC): Land Surface Climatology in the NCEP CFS Reanalysis
15. **Pegion** (ESRL): The Seasonal Footprinting Mechanism in CFSv2:Simulation
16. **Peng** (NCEP/CPC): An assessment of CFSv2 performance in seasonal hindcast
17. **Regonda** (NWS/OHD): Verification of precipitation hindcasts from CFSv2 at different spatial and temporal scales across the contiguous United States
18. **Sun** (NOAA/ESRL): Global Coupled Atmosphere/Ocean Models for Climate and Seasonal Forecast Applications.
19. **Thiaw** (NCEP/CPC): Climate Dynamics of Africa in the NCEP Climate Forecast System
20. **Vintzileos** (NCEP/CPC): Realtime Oceanographic Monitoring and Forecasting Support of DYNAMO using CFS
21. **Wang, H.** (NCEP/CPC): Comparison of Dynamical-Statistical Hurricane Prediction Skill between CFSv1 and CFSv2
22. **Wen** (NCEP/CPC): Prediction skills of North Pacific SSTs and PDO in the NCEP CFSV2
23. **Xie** (NCEP/CPC): Correcting the Bias in the CFS Version 2 Land Precipitation Forecasts.
24. **Yoo** (UMD/ESSIC): An analysis of NCEP GFS low clouds over the eastern tropical oceans using satellite and ground-based measurements
25. **Zhang, Q.** (NCEP/CPC): Relative Merit of Model Improvement versus Availability of Retrospective Forecasts: The case of Climate Forecast System MJO prediction